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Orthopedic Treatment Outcomes and Physical Therapists' Orthopedic Clinical Specialist Status

Karin Granberg

LOMA LINDA UNIVERSITY

School of Allied Health Professions

ORTHOPEDIC TREATMENT OUTCOMES AND PHYSICAL THERAPISTS' ORTHOPEDIC CLINICAL SPECIALIST STATUS

By

Karin Granberg

A Publishable Paper in Lieu of a Thesis in Partial Fulfillment of the Requirements for the Degree Doctor of Physical Therapy Science

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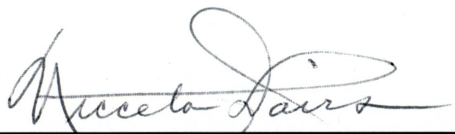

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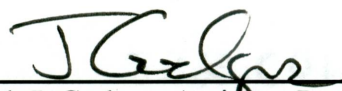

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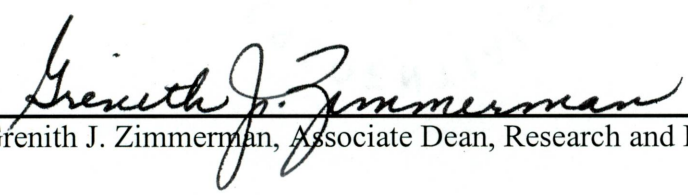

Grenith J. Zimmerman, Associate Dean, Research and Professor of Biostatistics

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ABSTRACT

ORTHOPEDIC TREATMENT OUTCOMES BY PHYSICAL THERAPISTS' ORTHOPEDIC CLINICAL SPECIALIST CERTIFICATION STATUS

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Background and Purpose. Orthopedic Clinical Specialist (OCS) certification has been available since 1989, however, no prospective studies exist demonstrating better patient outcomes with OCS certification. The purpose of this study was to prospectively explore if there are differences in effectiveness as measured by health, work status and patient satisfaction; efficiency, as measured by visits, treatment duration, number of treatment codes and cost; value (unit of functional improvement per dollar charged), and utilization (unit of functional improvement per visit) depending on OCS status of PTs working in orthopedic outpatient settings. **Subjects.** Six PTs with OCS certification and 11 PTs without certification working in 8 clinics volunteered and recruited 279 subjects. **Methods.** Consecutively sampled new subjects completed researcher-developed questionnaires and the acute Short Form 12-Item Health Survey (SF-12v2) at their initial and sixth visits. In addition, at the sixth visit subjects completed the Physical Therapy Outpatient Satisfaction Survey. A post study chart review was done. Adjusted change scores, standardized response means, and minimal clinically important differences were used to compare health, value, and utilization. **Results.** No difference was found between groups in work status, satisfaction, number of visits, treatment duration, and total number of treatment codes billed. The mean (± SD) of total cost and cost per visit in the non-OCS group were less than in the OCS group \$700.59 ±239.43 vs. \$837.05±239.67 ($p < .001$) and \$122.97 ±39.32 vs. \$147.23 ±39.37 ($p < .001$), respectively. The OCS group demonstrated better mean (± SD) Mental Component Summary (MCS) scores 4.7 ±7.8 vs. 0.6±7.8 ($p = .004$) and better utilization for the dimensions of bodily pain 1.3 ±1.8 vs. 0.6 ±1.8 ($p = .002$), mental health 0.92 ± 1.74 vs. 0.30 ± 1.73 ($p < .005$), and MCS 0.76 ± 1.62 vs. 0.20 ± 1.61 ($p < .006$). The OCS group had more standardized response means interpreted as large, and more "minimal clinically important

differences" in health, value, and utilizations than the non-OCS group. **Discussion and Conclusion.** Non-OCS certified PTs were more cost effective, but cost was confounded by clinic differences in billing. OCS certified PTs had better treatment quality in dimensions of mental health and bodily pain, rather than better physical function outcomes as previously demonstrated retrospectively by Hart and Dobrzykowski.[1]

Key Words: *Health-related quality of life, Orthopaedic clinical specialist, Outcomes, Patient satisfaction*

[1] Hart Dl, Dobrzykowski, EA. Influence of orthopedic clinical specialist certification on clinical outcomes. *J Ortho Sports Phys Ther*. April 2000;30:183-193.

Approximately 2563 physical therapists currently have an orthopedic clinical specialist (OCS) certification. The increased popularity of achieving an OCS certification has made the orthopedic specialty area the largest within physical therapy.[1,2] The increased demand for clinical accountability, from "funding agencies, health practitioners, and health conscious consumers" in regards to cost-effectiveness and quality of patient care, however, has forced the physical therapy profession to further validate the value of advanced certification for physical therapists.[3]

Demands on OCS certified physical therapists are high. They are assumed to have "knowledge, skill, and experience *exceeding* that of the physical therapist at entry to the profession", and to be able to excel by promoting "the *highest possible level of care* for individuals seeking physical therapy services", and they are expected to develop a *greater depth* of knowledge and skills in their specialty area.[1,4,5,6] (Italics added). Since expertise refers to the mechanisms underlying the superior achievement of an expert, they are assumed to achieve superior patient outcomes.[1,4,5,7-9] The validity of these assumptions, however, has not been scientifically established.[2,4,10,11]

In spite of many research studies of expertise within physical therapy,[2,4,9,11-16] few studies have evaluated patient outcomes from OCS certified physical therapists.[2,11] Conflicting results exist regarding the influence of OCS certification status on patient outcomes.[2,11] Hart and Dobrzykowski[2] retrospectively studied therapists with and without OCS certification to determine effectivity, efficiency, value, and utilization for patients in multiple impairment categories. Effectivity was assessed by changes in health status; efficiency was assessed by number of visits, duration of treatment episode, and cost. Value was defined as unit of functional improvement per dollar cost to the payer and utilization as unit of functional improvement per visit. Although there was no significant difference in effectiveness between groups, OCS therapists demonstrated better resource utilization (efficiency) than non-OCS therapists, with fewer and less costly visits, and fewer treatment procedures performed for the same treatment period. This increased efficiency indicates financial advantages associated with the OCS certification, and supports the specialization process.[2]

Resnik and Hart,[11] on the other hand, did not focus on comparing OCS and non-OCS certified physical therapists, but retrospectively assessed overall health status outcomes from therapists treating patients with low back syndrome, using the data base Focus on Therapeutic Outcomes (FOTO). Of the 930

physical therapists assessed in this study, 26 were OCS certified. The researchers classified physical therapists as experts if patients at discharge reported risk adjusted health status scores above the 90th percentile and as average therapists if scores were between the 45th and 55th percentiles. Only 5 of the 26 (19%) OCS certified physical therapists had expert categorized health status outcomes, while 10 (31%) had health status categorized outcomes below the 50th percentile, giving no clear indication of better health related patient outcomes for physical therapists with an advanced certification.

In previous studies, patient satisfaction and work status have not been compared for OCS and non-OCS certified physical therapists. As these variables have direct health and cost related importance, they should be assessed to broaden our understanding of the benefits and value of the OCS certification.[7,17-20]

If OCS certified physical therapists could demonstrate that they were able to achieve better patient outcomes or better resource utilization, thus lowering the cost of treatments compared to their non-certified colleagues, it would be beneficial for patients to receive treatment from physical therapists who are OCS certified.[2,10] The cost to the physical therapists for achieving an OCS certification, however, combined with eventual increased costs for employers to hire them, could result in future patients being required to pay more for treatments from physical therapists with an OCS certification.[2] Because it remains unclear what the assumed benefits of the OCS certification are to patients and society, and whether eventual benefits outweigh the costs, further research is needed in this area.[10]

The purpose of this study was to prospectively explore whether there is a difference in the effectiveness and efficiency of non-OCS and OCS certified physical therapists in the orthopedic outpatient setting. Effectiveness was measured by patients' self-reported health status, work status, and patient satisfaction. Efficiency was measured by number of visits, duration of treatment episode (defined as the number of days between the first and the sixth visit), type of treatment codes used per treatment period, number of treatment codes used per treatment and total treatment episode, and cost per treatment and total treatment episode. Differences between the two groups on value (unit of functional improvement per dollar billed to the payer), and utilization (unit of functional improvement per visit) were also assessed.[2]

Methods

Subjects

Seventeen physical therapists (PTs), 6 OCS and 11 non-OCS, working in eight orthopedic outpatient clinics agreed to participate. To be included in the study, therapists had to have a current PT license, and have worked a minimum of 2000 hours within the outpatient orthopedic setting, of which 25% must have occurred within the last three years.[1] In addition, therapists in the OCS certified group had to have passed the OCS certification examination.

The physical therapists consecutively recruited new patients who were 18 years and older, and needed physical therapy treatment due to orthopedic problems. Patients referred only for an evaluation were excluded. Both physical therapists and patients participating in the study signed informed consents approved by the Institutional Review Board at Loma Linda University. Data was collected from October 2002 to December 2003.

Instruments

Medical Outcome Study Acute 12-Item Short Form Health Survey Version 2 (SF- 12v2).[21] Health status was measured by the acute version of the 12-Item Short Form Health Survey, version 2 (SF-12v2).[21] The SF-12v2 survey is constructed as a subset of questions from the 36-item Short Form Health Survey (SF-36).[21-23] The physical and mental constructs of the SF-36 have been condensed into two summary measures, the Physical Component Summary (PCS) scale and the Mental Component Summary (MCS) scale.[24] The SF-12v2 is a health related quality of life instrument, which assesses functional health and dimensions of physical and mental health status (eight scales and two summary measures).[21] Each scale is an estimate of the current level of health, well-being, and functional ability related to a specific construct. The SF-12v2 can be printed on 1-2 pages, and is administered in less than 2 minutes.[21] Both the original SF-12 and the SF12v2 have been shown to be highly reliable and valid in assessing physical and mental health status among subjects in the general U.S. population, and among subjects of all ages known to differ on a variety of physical and mental conditions, and with different chronicity of problems.[21,25] The validity and reliability of the original and second version of the SF-12 PCS and SF-12 MCS scales have been well documented.[21,22,25] Empirical validity established for the SF-36 has been replicated for the individual scales

and the PCS and MCS summary measures of the SF-12v2.[21] These SF-12v2 summary scales achieved R^2 values of .91 and .92, respectively, in predictions of the SF-36 PCS and MCS scores.[21]Reliability coefficients ranged from .78 to .87 across the eight SF-12v2 health scales in the general 2000 U.S. population, and test-retest correlations of .89 and .86, respectively, were found for the SF-12v2 PCS and MCS scores in the general 1998 U.S. population.[21]

Physical Therapy Outpatient Satisfaction. Patient satisfaction was measured by the Physical Therapy Outpatient Satisfaction Survey (PTOPS),[19] which measures patient satisfaction in four dimensions: enhancers, detractors, location, and cost. The questionnaire has 34 questions scaled on a 5-point Likert scale, with 5 indicating greater satisfaction, and is administered in 6-10 minutes. The PTOPS has been adjusted for response and gender bias, and factor analysis has confirmed that the included dimensions assess separate dimensions. The tool has been tested for reliability and validity, and correctly classified 94% of outpatient multiple sclerosis patients as either satisfied or dissatisfied.[19]

Canadian Back Institute (CBI) Survey [26] McIntosh et al,[26] developed the Canadian Back Institute (CBI) survey, to measure service quality in physical therapy clinics across Canada. The CBI is scaled on a 5-point Likert scale, with higher scores indicating greater satisfaction. It has been found to be able to "capture the levels and importance of service quality dimensions", and has content validity. Five of the original 26 CBI questions (numbers 5,10,13,18, and 19) were adapted and used in this study. The questions used assessed subjects' perception of their therapist's ability to resolve their problem, educational ability, ability to change the treatment based upon patient feed-back, and technical skills and knowledge (abilities where experts have been shown to be better than novices).[1,13,14,19,27] Because only five questions were used in this study, these questions have face validity, but unknown reliability.

Procedures

This was a prospective observational study. Study information was delivered by phone, mail, and by personal meetings with physical therapists in corporations located within two hours driving range of Loma Linda University. Participating physical therapists received a subject packet for each participating subject. Subject packets consisted of questionnaires and data sheets, and were marked with a specific research number for later identification of the clinic where subjects received therapy, and the physical

therapist who provided the therapy. Questionnaires and data sheets were stored in the subjects' charts. Office personnel or the patients' physical therapist recruited all consecutive new orthopedic subjects from the date each clinic started the subject recruitment. They distributed questionnaires at each subject's first and sixth visits after subjects had filled out informed consents. Subjects dropped questionnaires into a sealed box after they filled them out. If subjects were discharged before the sixth visit, they received the follow-up questionnaire at discharge, and if they had not had six visits after two months from the initial visit, the follow-up questionnaire was distributed within a week (+/-) of two months. A chart review was done after the subject had filled out both questionnaires.

Data Analysis

The statistical program SPSS version 10.0 for Windows[28] was utilized for statistical analyses. The alpha level was adjusted to .01 for the outcome variable analyses, to decrease type I error. Because there was no randomization to groups, confounding variables were compared using independent t- tests and chi-square tests to determine equivalence of the groups. These variables were age,[29,30] depression,[29] comorbidity,[29] acuity of symptoms,[7] intake functional status (severity),[2,29] insurance source,[30-32] history of surgery,[29,30,33] initial high pain level,[34]problem reoccurence, and previous treatment of the current problem.[33] Presence of depression was based on question 6c assessing mental health in the SF-12v2.[21] Subjects were considered to be depressed if they answered that they had felt down hearted and depressed all or most of the time. Initial bodily pain was based upon the quintiles of the sum of the initial SF-12v2 transformed scale scores. Work related variables assessed were initial employment status,[29,33,35] and initial work demands.[36,37] The descriptive variables assessed were gender, education, diagnostic category, type of clinic, and whether subjects received treatment at a clinic where physical therapist assistants aided the physical therapists. Subjects were classified into diagnostic categories by primary anatomical part treated by the physical therapist, information which was determined from reviewing the subjects' charts.

Health Status. According to published scoring instructions, the scores from each health SF-12v2 scale were recoded, summed, and transformed to range from 1-100, higher scores indicating better health.[21] Total health status was defined as the mean of the eight SF-12v2 health scales for both the first and the sixth visit.[2] Initial severity level was categorized using the appropriate quartile of the sum of the initial SF-12v2

total health status.[2] The Mental Component Summary (MCS-12) and Physical Component Summary (PCS-12) scores of the SF-12v2 were standardized using a linear t-score transformation to have a mean of 50 and a SD of 10 based on the general 1998 U.S. population.[21] Analyses of covariance (ANCOVA) was used to compare the OCS groups' change for the SF-12v2 scales in health, value, and utilization. The dependent variable was the 6th visit's score for each scale, the OCS group was the independent variable, and the 1st visit's score for each scale was the covariate.

Standardized response means (SRMs)[38] were also calculated as change scores for health status. To create the SRMs, the first visit's SF-12v2 scale scores were subtracted from the sixth visit's scale scores for each subject and divided by the standard deviation of the change score for the appropriate group (SRM = (discharge-intake)/SD of change). Standardized response means are considered to be a responsive measure for assessing the size of change between groups (i.e., SRMs are able to detect clinically relevant change).[37,39] The size of change can be interpreted as an effect size: insignificant (.0-.1), small (.2-.4), moderate (.5-.7) or large (.8 and above).[37,40] Standardized response means, value, and utilization statistics were calculated on a subject-by-subject basis.

Minimal clinically important differences (MCID), another estimate of the relevance of change scores to the practitioner, have been proposed to be 12-15% or larger score differences compared to initial mean scores for the group.[41,42] The MCID were calculated for each health scale on a group-by-group basis. To calculate MCID estimates for the SF-12v2 health scales, the mean change score for each scale (adjusted for initial scale scores in ANCOVA analysis) was divided by the first visit's mean score for the same scale.

Work Status. Subjects' work status was assessed at their first and sixth visits through the questionnaires, and for subjects who had a decline in their work status, also by phone at two months. A decline in work status was defined as checking a poorer work status level in the follow-up questionnaire compared to the first questionnaire. Subjects who indicated that they were no longer employed were not contacted at two months. Work status differences between OCS groups at the 6th visit and two months were compared by chi-square tests for homogeneity, and change within each OCS group was compared at the 6th visit and at two months by McNemar tests.

Patient Satisfaction. Questions from the Physical Therapy Outpatient Satisfaction Survey (PTOPS)[19] were scored and recoded according to scoring instructions. Subjects with Worker's Compensation insurance were not included in the analyses of satisfaction of cost, as the majority left this dimension unanswered. The question related to expertise attributes, (number 18, adapted from the Canadian Back Institute (CBI) survey)[26] was adapted in this study so lower scores indicated higher satisfaction. This question was recoded so higher scores indicated increased satisfaction. The overall expert attribute score was the mean score for the five expertise questions. Satisfaction was compared for OCS status using Mann-Whitney *U* tests.

Cost. Cost was defined as the dollar amount clinics charged for the treatment codes billed, including co-pay. Cost was assessed two ways. For two clinics, it was assessed and manually calculated based on these clinics' charge lists, coupled with the treatment code information their PTs had entered in the subjects' data sheets. The other six clinics delivered computer outputs containing cost information. The distributions of type of treatment codes billed per period (assessed by common procedural terminology (CPT) codes for evaluations, modalities, and procedures) were compared using chi-square statistics. Number of visits, duration (defined as days from first to the sixth visit), treatment codes billed per treatment and per visit, and cost per treatment and per treatment period were assessed with ANCOVA analyses, with OCS group as the independent variable, and initial total health score as the covariate.

Value and Utilization. Value (the unit of functional improvement / dollar billed to the payer) was calculated using the SRMs for each of the SF-12v2 scales divided by total cost and multiplied by 1000, ((SRM/total cost) * 1000).[2] Utilization (unit of functional improvement/ visit) was calculated by dividing the SRMs for each of the SF-12v2 scales by number of visits multiplied by 10, ((SRM/total visits) *10).[2] Both value and utilization were calculated on a subject-by-subject basis.

Results

Clinics

Information about clinic setting, location, size (the number of full time employed physical therapists and employed physical therapy assistants), physical therapy certification status, and recruited subjects per clinic is displayed in Table 1.

Table 1.

Distribution of Clinic Characteristics by Clinic

	Clinic Type							
	Hospital A	WC* B	HMO C	Private D	Private E†	Private F†	Private G†	Private H†
Full time employed PTs‡	>4	1	>3	>3	3	1	>3	3
Employed PTAs‡	>3	2	2	0	3	1	1	0
Participating Non-OCS PTs	1	1	2	4	1	1	1	0
Participating OCS certified PTs	1	0	3	0	1	0	0	1
Subjects recruited	33	17	98	66	26	16	9	14

* WC = Worker's Compensation

† Clinics belonging to the same organization

‡ PTs = Physical therapists, PTA = Physical therapist assistants

Physical Therapists

Eleven non-OCS certified physical therapists (non-OCS PTs) and 6 OCS certified physical therapists (OCS PTs) participated in the study. The PTs in the study worked full time, recruited a median of 17 subjects who finished the study (Min = 9, Max = 22), and had a median dropout of 5 subjects (Min = 2, Max = 19). There was no significant difference in subject dropout rate between non-OCS and OCS PTs ($p = .95$). Although not significantly different, non-OCS PTs were younger, had higher educational status, worked more hours per week in direct patient contact, and had fewer years of clinical experience than OCS certified PTs (Table 2). Three non-OCS PTs were currently preparing to sit for the OCS examination, and one of them had prepared for it before. Non-OCS certified PTs had been licensed fewer years than the OCS certified PTs ($p = .03$). The median years licensed as a PT was 5 years for the non-OCS PTs (Min = 1, Max = 15), and 11.5 years for the OCS PTs (Min = 6, Max = 14). The mean years OCS certified PTs had been certified was 4.3 years (SD = 2.7). Two of the OCS certified PTs had achieved their OCS certification before 2001, and 4 had achieved theirs after 2001.

Table 2.

Distribution of Physical Therapist Characteristics by Orthopedic Clinical Specialist (OCS) Certification Status

	Non-OCS (n = 11)		OCS (n = 6)		
	%	(n)	%	(n)	p*
Gender					
Males	54.5	(6)	33.3	(2)	
Females	45.5	(5)	66.7	(4)	.40
Age (Years)					
20-29	9.1	(1)	0.0	(0)	
30-39	54.5	(6)	66.7	(4)	
40-49	36.4	(4)	33.3	(2)	.72
Educational Status					
Bachelors	9.1	(1)	17.0	(1)	
Masters	54.5	(6)	67.0	(4)	
Doctorate	36.4	(4)	17.0	(1)	.67
Hours Worked Per Week in Direct Patient Contact					
21-30	18.2	(2)	33.3	(2)	
31-40	54.5	(6)	50.0	(3)	
>40	27.3	(3)	16.7	(1)	.75
Years of Clinical Experience					
<5	36.4	(4)	0.0	(0)	
5-9	36.4	(4)	33.3	(2)	
10-14	18.2	(2)	50.0	(3)	
15-19	9.1	(1)	16.7	(1)	.29
Other Specializations					
No	81.8	(9)	83.3	(5)	
Yes	18.2	(2)	16.7	(1)	.94

* Chi-square tests

Subjects

Initially 401 patients volunteered for the study. Of these, 122 (30.4 %) dropped out before filling out both questionnaires. Some did not want to continue the study because they changed their minds, but most subjects who dropped out never came back for another treatment session. Compared to the subjects who finished the study, subjects who dropped out had better initial work status. They were more frequently employed working full time (47% vs 31%), and less frequently employed but not working due to health (5% vs. 15%), not working receiving disability (9% vs. 15%), or retired (16% vs. 23%). Demographic information for the remaining 279 subjects is displayed in Tables 3, 4, and 5. Variables that were significantly different between subjects in the OCS and non-OCS groups were type of clinic where subjects received treatment ($p < .001$), insurance source ($p = .001$), and whether or not subjects received treatment at a clinic where PTs were assisted by physical therapist assistants (PTAs) ($p < .001$, Table 3). More subjects in the non-OCS group received treatment in private practice based clinics, and less received treatment at the health maintenance organization (HMO) clinic compared to the OCS group. No subjects in the OCS group were treated at the Worker's Compensation (WC) based clinic. More subjects in the non-OCS group had private, WC and "other " insurance, and fewer had HMO insurance. More subjects in the OCS group received treatment in clinics where PTAs assisted the physical therapists. Subjects in the OCS and the non-OCS group did not differ on variables related to variables indicating problem severity (Table 4) or work status and work demands (Table 5).

Table 3.

Distribution of Subject Age, Gender, Education and Diagnostic Category by Orthopedic Clinical Specialist (OCS) Certification Status

	Non-OCS (n = 177)		OCS (n = 102)		
	%	(n)	%	(n)	p*
Age (Years)					
20-29	8.6	15	9.8	10	
30-39	15.3	27	10.8	11	
40-49	24.9	44	34.3	35	
50-59	21.5	38	19.6	20	
60-69	17.5	31	19.6	20	
≥ 70	11.3	20	5.9	6	.37
Gender					
Male	39.5	70	37.3	38	
Female	60.5	107	62.7	64	.72
Education					
No High School Diploma	5.6	10	2	2	
High School Diploma	16.9	30	9.8	10	
High School and Some College	42.9	76	44.1	45	
College Degree or Higher	33.4	59	43.1	44	.15
Diagnostic Category					
Cervical Spine	14.1	25	11.8	12	
Lumbar Spine	14.7	26	14.7	15	
Shoulder	23.7	42	15.7	16	
Arm, excluding shoulder	14.1	25	13.7	14	
Lower Extremity	33.3	59	44.0	45	.25
Type of Clinic					
Private Practice	58.2	103	27.5	28	
HMO	22.6	40	56.9	58	
Workman's Comp	9.6	17	0	0	
Outpatient Hospital	9.6	17	15.7	16	<.001†
Insurance Source					
Private Insurance	22	39	14.7	15	
HMO	25.4	45	50	51	
Workman's Comp	35.6	63	23.5	24	
Other	16.9	30	11.8	12	<.001†
Physical Therapist Assistants‡					
No	37.3	66	13.7	14	
Yes	62.7	111	86.3	88	<.001†

* Chi-square tests

† Significant difference < .01

‡ Subject received treatment at a clinic were they used physical therapist assistants

Table 4.

Comparison of Severity of Problem by Orthopedic Clinical Specialist (OCS) Certification Status

	Non-OCS (n = 177)		OCS (n= 102)		
	%	(n)	%	(n)	p*
Chronicity					
< 1 month	11.3	(20)	16.7	(17)	
1 -3 months	20.3	(36)	29.4	(30)	
> 3 months	61.6	(109)	48.0	(49)	
Cannot recall	5.6	(10)	5.9	(6)	.10
Problem Reoccurence					
No	58.3	(102)	63.7	(65)	
Yes	41.7	(73)	36.3	(37)	.37
Previous Treatment of Current Problem					
No	68.4	(121)	74.5	(76)	
Yes	30.5	(54)	23.5	(24)	.20
Comorbidity					
No other problems	51.4	(91)	49.0	(50)	
1 other problem	30.5	(54)	25.5	(26)	
2 or more other problems	17.5	(31)	22.6	(23)	.48
Initial Severity Level†					
Very Severe (1-25)	5.6	(10)	6.9	(7)	
Severe (26-55)	29.6	(53)	35.3	(36)	
Moderate (56-75)	48.6	(87)	44.1	(45)	
Slight (76-100)	13.4	(24)	13.7	(14)	.59
Initial Bodily Pain‡					
Extremely (0-20)	10.7	(19)	11.8	(12)	
Quite a lot (21-40)	31.6	(56)	37.3	(38)	
Moderately (41-60)	29.9	(53)	26.5	(27)	
A little bit (61-80)	22.6	(40)	20.6	(21)	
Not at all (81-100)	5.1	(9)	3.9	(4)	.87
Previous Surgery					
No	55.4	(98)	48.0	(49)	
Yes	44.6	(79)	52.0	(53)	.24
Initial Depression					
Not Present	89.3	(158)	92.2	(94)	
Present	10.7	(19)	7.8	(8)	.43

* Chi-square tests

† Initial severity level was compared based upon the quartiles of the sum of the initial SF-12v2 transformed scale score for initial total health

‡ Initial bodily pain was compared based upon the quintiles of the sum of the initial SF-12v2 transformed scale score for initial bodily pain

Table 5.

Comparison of Work Status and Work Demands by Orthopedic Clinical Specialist (OCS) Certification Status

	Non-OCS (n = 177)		OCS (n = 102)		
	%	(n)	%	(n)	p*
Initial Work Status					
Employed Working Full Time	26.0	(46)	39.2	(40)	
Employed Working Full Time But Light Duty	4.0	(7)	3.9	(4)	
Employed Working Part Time	6.2	(11)	6.9	(7)	
Employed But Not Working Due to Health	15.8	(28)	13.7	(14)	
Not Working Receiving Disability	16.9	(30)	10.8	(11)	
Unemployed	5.1	(9)	2.9	(3)	
Retired	24.3	(43)	20.6	(21)	
Student	1.7	(3)	2.0	(2)	.46
Initial Work Demands					
Light	18.1	(32)	19.6	(20)	
Medium	29.4	(52)	33.3	(34)	
Heavy	20.9	(37)	15.7	(16)	
Very Heavy	13.0	(23)	11.8	(12)	.70

*Chi-square tests

SF-12v2 Health Status Results. Health status change is summarized in Table 6. Mean change in health for the non-OCS group ranged from -.21 for general health to 9.55 for role physical (role limitations due to physical health problems), and from 1.08 for general health to 17.95 for bodily pain in the OCS group. Although not significant at the 1% level, total health status (p = .03), bodily pain (p = .04), and mental health (p = .02) were better for the OCS group. The OCS group had significantly better Mental Component Summary (MCS) scores (p = .004). Unfortunately, the power associated with the ANCOVA analyses was very low for most comparisons.

The SRMs for the non-OCS group ranged from .06 for general health to .44 for vitality, and for the OCS group from -.06 for general health to .71 for total health. The frequency distribution of health scales SRMs into effect size[40] categories for the non-OCS group compared to the OCS group was: insignificant: 3 (27%) vs. 1(9%); small: 7(64%) vs. 6(55%); moderate: 1(9%) vs. 4(36%) . No SRMs were scored as large in either group.

Table 6.
Health Status Change and Standardized Response Means (SRM) by Orthopedic Clinical Specialist (OCS) Certification

	Non-OCS (n = 177)				OCS (n = 102)					
Variables	Mean*	(SD)*	MCID†	SRM‡	Mean*	(SD)*	MCID†	SRM‡	p§	Power
Total Health Status‖	4.51	(12.88)	.08	.43	11.67	(12.90)	.22	.71	.03	.61
Physical Functioning	6.39	(25.37)	.15	.30	9.04	(25.38)	.23	.28	.88	.05
Role Physical	9.55	(22.59)	.23	.39	15.02	(22.61)	.41	.59	.66	.07
Bodily Pain	8.73	(24.37)	.19	.32	17.95	(24.39)	.43	.66	.04	.53
General Health	-.21	(13.85)	.00	.06	1.08	(13.87)	.02	-.06	.32	.17
Vitality	7.99	(20.40)	.18	.44	13.10	(20.40)	.32	.55	.38	.14
Social functioning	3.16	(24.44)	.05	.24	14.88	(24.48)	.24	.42	.14	.31
Role Emotional	.75	(22.46)	.01	.09	10.09	(22.47)	.15	.33	.06	.48
Mental Health	2.99	(15.71)	.05	.20	8.16	(15.71)	.13	.49	.02	.68
PCS¶	2.86	(7.50)	.08	.50	4.02	(7.50)	.11	.43	.85	.05
MCS#	.55	(7.80)	.01	.10	4.69	(7.80)	.10	.45	.004	.83

* Means and SDs are adjusted by initial scale scores

† MCID = Minimal clinically important difference ≥12-15% compared to initial scores

‡ Standardized Response Mean = ((6th visit health scale- 1st visit health scale)/ SD of change score for groups)

§ ANCOVA analyses: 6th visit health scale (dependent variable), OCS (independent), and initial health scale (covariate)

‖ Total health status = sum of the 8 health scales divided by total number of health scales

¶ Physical Component Summary Score (Summarizes physical functioning of the SF-12v2)

\# Mental Component Summary Score (Summarizes mental functioning of the SF-12v2)

The non-OCS group had 4 of 11 health scales with minimal clinically important differences (MCID), a difference larger than 12-15% compared to their initial mean scale score.[41,42] The OCS group had 8 of 11 of the health scales with MCID. Both groups had MCID in physical functioning, role physical, bodily pain and vitality, but the OCS group also had MCID in total health, social functioning, role emotional, and mental health.

Work Status. Work status was not significantly different between OCS groups (sixth visit, $p = .83$; two months, $p = .53$) or within each OCS group (non-OCS group, sixth visit, $p = 1.00$; two months, $p = .09$; OCS group, sixth visit, $p = .51$, two months, $p = .45$).

Patient Satisfaction. Subjects in both groups indicated high satisfaction for the three PTOPS dimensions: enhancers, detractors and location; satisfaction for the cost was more neutral (Table 7). Median satisfaction was also high for questions related to expert attributes, and the overall perception of the therapists' expert attributes (Table 8). Neither the PTOPS satisfaction dimensions nor the expert attributes were significantly different between groups.

Table 7.

Comparison of Satisfaction Dimensions by Orthopedic Clinical Specialist (OCS) Status

	Non-OCS (n = 177)		OCS (n = 102)		
Dimensions	Median	(Min-Max)	Median	(Min-Max)	p*
Enhancers†	4.5	(3.0-5.0)	4.4	(3.8-5.0)	.53
Detractors‡	1.6	(1.0-3.4)	1.7	(1.0-3.0)	.19
Location†	4.3	(2.1-5.0)	4.3	(2.4-5.0)	.51
Cost‡ §	2.9	(2.1-3.9)	2.9	(2.1-3.7)	.95

* Mann-Whitney *U* tests

† Positive scale, (1-5) higher scores indicate higher satisfaction

‡ Negative scale, (1-5) higher scores indicate less satisfaction

§ No Worker's Compensation patients are included in the cost dimension

Table 8.

Satisfaction With Expert Attribute Variables by Orthopedic Clinical Specialist (OCS) Status

	Non-OCS (n = 177)		OCS (n = 102)		
Patient Satisfaction* with PT's	Median	(Min-Max)	Median	(Min-Max)	p†
Ability to solve the problem	4	(1-5)	5	(1-5)	.10
Ability to change the treatment to meet the patient's needs	5	(2-5)	5	(2-5)	.39
Treatment skills	5	(1-5)	5	(1-5)	.36
Knowledge	5	(1-5)	5	(2-5)	.87
Ability to deliver treatment education	5	(2-5)	5	(3-5)	.99
Overall satisfaction scale with expert attributes	4.6	(2.2-5.0)	4.8	(3.4-5.0)	.25

* Scores range from 1-5, 5 indicating higher satisfaction

† Mann-Whitney *U* tests

Visits and Duration. Mean number of visits for the non-OCS group was 5.7 (SD = 0.7) vs. 5.7 (SD = 0.8) for the OCS group. Mean duration in days for the non-OCS group was 22.6 (SD = 13.9) vs. 24.2 (SD = 13.4) for the OCS group. Neither variable was significantly different between groups (p = .61 and p = .18, respectively).

Treatment Codes. The mean number of billed treatment codes per period for the non-OCS group was 14.9 (SD = 4.9) vs. 15.0 (SD = 4.9) for the OCS group; mean number of treatment codes billed per visit for the non-OCS group was 2.6 (SD = 1.0) vs. 2.6 (SD = 0.7) for the OCS group. Neither variable was significantly different between groups (p = .86, and p = .65, respectively). More subjects in the non-OCS group were billed for manual therapy techniques compared to the OCS group (78% vs. 64%, p = .01). Fewer in the non-OCS group were billed for hot and cold packs compared to the OCS group (20% vs. 34%, p = .01).

Cost. The mean cost (defined as the dollar amount clinics charged for the treatment codes billed, including co-pay) per period was significantly lower for subjects in the non-OCS s group ($p < .001$). The mean cost per period for the non-OCS group was $700.59 (SD = 239.43), and for the OCS group $837.05 (SD = 115.62). The mean cost per visit was also significantly lower for subjects in the non-OCS group (non-OCS $122.97 (SD = 39.32) and OCS $147.23 (SD = 39.37), $p < .001$). Because two of the eight clinics participating in the study did not have both non-OCS and OCS certified PTs participating (clinics B and D), cost differences between non-OCS and OCS groups could have been due to billing differences in these clinics. Therefore, post hoc analyses were done excluding subjects from these clinics. The result of the post hoc analyses showed that cost per period and per visit were not significantly different between non-OCS and OCS certified PTs with these two clinics excluded. Mean cost per period for the non-OCS group was $798.28 (SD = 798.28) and for the OCS group $834.25 (SD = 251.78), (p = .32). The mean cost per visit for the non-OCS group was $143.03 (SD = 39.44), and for the OCS group $146.99(39.39), (p = .48).

Value. The mean values (unit of functional improvement/ dollar cost) ranged from .09 for general health to .67 for total health in the non-OCS group compared to from -.04 for general health to .91 for bodily pain in the OCS group (Table 9). The non-OCS group had poorer values for seven of the 11 scales. Bodily pain (p =.03), Mental Component Summary (MCS) scores (p = .05), and Mental health (p = .07) were better for the OCS group. The frequency distribution of values into effect size categories[40] for the non-OCS group

compared to the OCS group was: insignificant: 2(18%) vs. 1(9%); small: 3(27%) vs. 3(27%); moderate: 6(56%) vs. 5(45%); large: 0(0%) vs. 2(18%).

Table 9.

Value by Orthopedic Clinical Specialist (OCS) Status

	Non-OCS (n = 177)			OCS (n = 102)				
Value*	Mean†	(SD)†	(Min-Max)	Mean†	(SD)†	(Min-Max)	p‡	Power
Total Health	.67	(1.51)	(-5.50-6.65)	.87	(1.51)	(-1.84-6.56)	.30	.18
Physical Functioning	.45	(1.43)	(-6.75-5.52)	.28	(1.42)	(-2.93-4.53)	.35	.16
Role Physical	.63	(1.42)	(-6.61-5.41)	.71	(1.41)	(-2.05-4.66)	.63	.08
Bodily Pain	.49	(1.48)	(-3.95-6.78)	.91	(1.48)	(-1.44-6.82)	.03	.61
General Health	.09	(1.55)	(-6.20-7.61)	-.04	(1.56)	(-5.01-5.25)	.50	.10
Vitality	.62	(1.44)	(-4.26-10.37)	.59	(1.43)	(-2.49-4.67)	.89	.05
Social Functioning	.23	(1.32)	(-6.13-5.32)	.39	(1.31)	(-2.24-4.54)	.33	.16
Role Emotional	.12	(1.48)	(-11.03-5.85)	.32	(1.48)	(-2.82-3.94)	.27	.20
Mental Health	.33	(1.58)	(-5.19-6.27)	.69	(1.59)	(-2.42-7.17)	.07	.44
PCS§	.60	(1.47)	(-5.69-6.78)	.52	(1.47)	(-2.30-5.35)	.67	.07
MCS‖	.20	(1.35)	(-4.85-6.10)	.53	(1.35)	(-2.35-4.03)	.05	.50

* Value= (Standardized Response Mean (SRM) of individual functional scale/total cost)*1000; higher scores indicate increased units of functional improvement per dollar charged

† Means and SDs are adjusted by initial scale scores, min and max values are unadjusted

‡ ANCOVA analyses, value of each health scale (dependent variable), OCS status (factor), and 1st health scale score (covariate)

§ Physical Component Summary Score (summarizes physical functioning of the SF-12v2)

‖ Mental Component Summary Score (summarizes mental functioning of the SF-12v2)

Utilizations. The mean utilizations (unit of functional improvement per visit) ranged from .13 for role emotional (role limitations due to emotional problems) to .76 for total health in the non-OCS group compared to from -.04 for general health to 1.32 for bodily pain in the OCS group (Table 10). Utilizations for bodily pain (p = .002), mental health (p = .005) and Mental Component Summary (MCS) scores (p = .006) were significantly better for the OCS group, and although other utilizations did not reach significance at the 1% level, utilizations (except for utilization of physical functioning and general health) were

consistently poorer in the non-OCS group. The distribution of utilizations into effect size[40] categories for the non-OCS group compared to the OCS group was: insignificant: 2(18%) vs. 1(9%); small: 3(27%) vs. 0(0%); moderate: 5(45%) vs. 3(27 %); large: 1(9%) vs. 7(64%).

Table 10.

Utilization by Orthopedic Clinical Specialist (OCS) Certification Status

	Non-OCS (n = 177)			OCS (n = 102)				
Utilization*	Mean†	(SD)†	(Min-Max)	Mean†	(SD)†	(Min-Max)	p‡	Power
Total Health	.76	(1.90)	(-5.55-5.71)	1.29	(1.91)	(-3.17-15.09)	.03	.60
Physical Functioning	.50	(1.68)	(-6.32-6.32)	.47	(1.69)	(-4.02-8.05)	.88	.05
Role Physical	.68	(1.71)	(-6.19-7.43)	1.03	(1.72)	(-2.74-8.21)	.11	.36
Bodily Pain	.59	(1.82)	(-5.77-5.77)	1.32	(1.82)	(-1.74-15.69)	.002	.89
General Health	.14	(1.75)	(-3.98-7.43)	-.04	(1.75)	(-7.96-8.53)	.41	.13
Vitality	.65	(1.54)	(-3.98-5.06)	.89	(1.55)	(-3.43-10.28)	.20	.25
Social Functioning	.34	(1.57)	(-5.99-5.99)	.61	(1.57)	(-2.70-8.11)	.17	.28
Role Emotional	.13	(1.52)	(6.65-5.82)	.48	(1.53)	(-5.29-4.53)	.06	.46
Mental Health	.30	(1.73)	(-4.86-6.08)	.92	(1.74)	(-3.88-7.76)	.005	.81
PCS§	.70	(1.80)	(5.40-8.24)	.80	(1.80)	(-2.74-12.30)	.65	.07
MCS‖	.20	(1.61)	(-4.54-4.93)	.76	(1.62)	(-4.03-6.52)	.006	.79

* Utilization = (Standardized Response Means (SRM) of each functional scale/visits)*10; higher scores indicate increased units of functional improvement per visit

† Means and SDs are adjusted by initial scale scores, min and max values are unadjusted

‡ ANCOVA analyses, value of each health scale (dependent variable), OCS status (factor), and 1st health scale score (covariate)

§ Physical Component Summary Score (summarizes physical functioning of the SF-12v2)

‖ Mental Component Summary Score (summarizes mental functioning of the SF-12v2)

Since approximately 50% of the subjects in each group indicated previous surgery for their problem, post hoc analyses were done to evaluate if surgery status could have confounded the outcomes. No differences were found in outcomes with post surgery subjects excluded. Posthoc analyses were also done to see if it made a difference in treatment outcomes to better balance the clinics by OCS status by excluding subjects participating from clinics B and D, where only non-OCS certified PTs were

participating. No better outcomes were demonstrated for the physical function dimension, although the role physical dimension of value and utilization did reach statistical significance at the 5% level favoring the OCS group. All other outcomes were similar to those with the total sample size included (except for cost as described earlier), but statistical power was diminished, decreasing statistical significance of some variables previously significant at .01 to signficance at .05.

Discussion

This study prospectively compared patient outcomes between physical therapists with and without the OCS certification, with mixed results. While the OCS certified physical therapists demonstrated better effectiveness, the non-OCS therapists were more efficient. The OCS certified physical therapists, however, also demonstrated better treatment quality in regards to utilization constructs.

Effectiveness. Mental health was the only effectiveness measure significantly better for the OCS group. This is in contrast to Hart and Dobrzykowski,[2] where the OCS group had better health related physical function. The better mental health in our study was not explained by differences in initial depression or satisfaction. We hypothesize that the OCS certified therapists were able to improve subjects mental health as a result of more individualized and focused interaction with their patients.[9,12-15,43]

Differences in physical function between this study and the study by Hart and Dobrzykovski[2] might be explained by differences between our OCS subjects' severity level, age, work status, and differences in length of follow-up compared to the OCS subjects' in Hart and Dobrzykowski's study.[2,29,35,44] Subjects in our OCS group had problems of less severity, as 7% had severe or very severe problems compared to 28% of subjects in the OCS group of Hart and Dobrzykowski's study. More of our OCS subjects were 50 years or older, 50% vs. 35%, and less subjects in our OCS group were initially employed (47% vs. 61%). Hart and Dobrzykowski assessed outcomes at discharge, while outcomes in this study were assessed at the sixth visit. The follow-up at the sixth visit could have been too soon to expect to find differences in physical function, especially since approximately 50% of the subjects in our study indicated previous surgery for their problem.[29,30,33] In addition, Hart and Dobrzykowski assessed physical function using 10 questions from the SF-36, while physical function in this study was assessed by only 2 questions.[2] Therefore, the physical function dimension in Hart and Dobrzykowski's study could have been

more sensitive to change.

In this study, visual inspection of the physical function scores between groups did not indicate clinically relevant differences, even if power had been more adequate. The physical function scale (SF-36), however, has been found to have decreased responsiveness among subjects with upper extremity deficits.[45] Because the SF-12v2 is a valid representation of the SF-36,[21] the decreased responsiveness of this scale might be applicable to the physical function scale of the SF-12v2. Although 48% of subjects in this study had upper extremity deficits, the differences in physical function outcomes between this and Hart and Dobrzykowski's study are probably not explained by limited responsiveness of the physical function scale due to subjects with upper extremity deficits, as the proportion of subjects with upper extremity deficits in the two samples did not differ.[2]

OCS certified PTs are assumed to have advanced practice capabilities, although this has not been validated. [2,4,10,11,46] Currently the OCS certification is a written examination and does not require any demonstration of increased clinical skills.[4] Outcome differences could have been confounded by differences in skill levels among the OCS certified PTs.[11,32] In addition, the OCS requirements of general and specific work experience within orthopedic physical therapy to quality for taking the OCS certification was drastically reduced in 2001. This could have led to existing qualitative differences among our OCS certified PTs, as 4 out of 6 of our OCS certified therapists were certified after 2001.

The OCS certified physical therapists may not have demonstrated improved patient handling capabilities in some areas because we made no effort to select patients with more complex clinical problems. Unlike medicine, current practice within physical therapy does not assign patients with special problems to specialized therapists, but patients are often assigned to the physical therapist with time available for new patients.

No difference was found for any patient satisfaction dimension assessed by the PTOPS[19] or by individual questions assessing expertise.[26] The similarity in patient satisfaction between groups might be explained by patients generally being satisfied with their provider unrelated to the physical therapists' expertise level.[2,14,32,47,48] Work status was also not different between groups. As previously mentioned for physical function, the follow-up at the 6th visit could also have been too short a time to expect to find differences in work status.

Efficiency. Initial analyses indicated that cost for the non-OCS group was significantly lower than for the OCS group. Posthoc analyses, however, revealed how clinic related differences in billing confounded the original cost comparison. Analyses for clinics which had both non-OCS and OCS certified physical therapists participating did not demonstrate any cost difference between groups. The OCS certified physical therapists in Hart and Dobrzykowski's study had lower cost compared to the non-OCS group.[2] Hart and Dobrzykowski, however, did not report any information regarding clinic differences for cost, so billing differences between clinics could have confounded their results.

Like Hart and Dobrzykowski,[2] we also assessed efficiency by number of visits, treatment duration, and number of treatment codes performed. None of these variables were significantly different between groups. This is probably because we used the 6th visit instead of the discharge for follow-up. All efficiency variables might have been different had we chosen discharge for follow-up. The sixth visit was chosen to limit the scope of this study, and to ensure a standardized follow-up point feasible for patients with different insurance carriers.

Value and Utilization. The constructs of value (unit of functional improvement per dollar) and utilizations (unit of functional improvment per visit) are measures of clinical quality.[2] The better utilizations for the OCS group for bodily pain and mental health are indicative of higher treatment quality in these dimensions, indicating advanced practice capabilities of the OCS certified PTs.[2]

Limitations and Suggestions for Future Study

This study had a more balanced therapist to client ratio in each group compared to Hart and Dobrzykowski.[2] The OCS groups were also equivalent on work status, work demands and other variables indicating the seriousness of the subjects' problems. The OCS groups were not balanced, however, on type of clinic, insurance source, and the PTs use of physical therapist assistants (PTAs), which could have influenced the results.[11,49-51] The small sample size and the associated low power hindered control for these variables in the ANCOVA analyses. As potential confounders, these variables could be important to control in future OCS studies.

It would have been better to have sampled only clinics where physical therapists with and without the OCS certification were participating, something which is recommended for the future. In addition, by

chosing to categorize subjects according to primary anatomical part treated, differences between subjects with varying diagnoses and varying severity of impairments could have been missed.[2,29,52,53] Therefore, subjects in future studies should be categorized by specific diagnostic categories, so possible differences between OCS groups for more homogeneous groups could be explored.[2]

Power was low for the ANCOVA analyses associated with health, value, and utilization. The sample size was not large enough to reach acceptable power of 80%, therefore, larger sample sizes are needed.[2,41] A higher power could also be achieved by utilizing the longer SF-36v2 instead of the SF-12v2, but the increased respondent burden might make it more difficult to recruit subjects.[21] In addition, value and utilization estimates used in this study have not been tested for reliability and validity.[2] Although the SF-12v2 has been found to be reliable and valid,[21,22,25] further studies are needed to confirm the realibility and validity of calculating value and utilization of physical therapists with and without the OCS certification.

While patient satisfaction was not able to discriminate between outcomes from therapists with different OCS status, bodily pain and utilization demonstrated good responsiveness, and seem to be good outcome variables to use together with the mental health dimensions of the SF-12v2.[29,35,54]

Thirty-three percent of the recruited subjects dropped out of the study. Subjects who dropped out had a better work status compared to subjects who remained. Results might have been different had these subjects stayed in the study.[29,35] No effort was made to gather data for other confounding variables, such as exercise, ethnic background, body mass index, income, or litigation status.[29,33,50,55] Future studies might also want to try to maximize responsiveness of the SF-12v2 by recruiting more subjects with lower extremity problems, and to test whether it makes a difference in outcomes if OCS status is compared for patients with more complex problems.

Choosing the 6th visit as follow-up instead of discharge limits the generalizability of the results, therefore, patients' discharge is recommended as the time for follow-up. Further, a systematic sampling of clinics would increase the representativeness of clinics in the area studied. Because subjects who did not speak or read English were not able to participate in the study, the results of this study are only generalizable for an English speaking patient population receiving physical therapy treatment for orthopedic problems in outpatient physical therapy clinics in southern California.

Conclusion

The results of this study indicate that OCS certified physical therapists can be more effective and have better utilization (unit of functional improvement per visit) in mental and pain-related health dimensions compared to non-OCS certified physical therapists. It seems to be harder to find differences between non-OCS and OCS certified therapists in physical function, except for physical function related to pain. Although non-OCS certified physical therapists can be more cost effective, cost is strongly influenced by individual clinic differences in billing. Further studies are needed to examine differences in effectiveness, efficiency, value, and utilization depending on OCS status.

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APPENDIX A

Literature Review

Orthopedic Treatment Outcomes By Physical Therapists' Orthopedic Clinical Specialist Status

Clinical specialization dates back to 1976, when the American Physical Therapy Association's (APTA) House of Delegates approved the concept of specialization and developed the *Essentials for Certification of Advanced Clinical Competence in Physical Therapy.*[1] The American Board of Physical Therapy Specialties is responsible of overseeing the certification of physical therapists who wish to become advanced practitioners.[2] The first orthopedic clinical specialization certification examination was administered in 1989.[3] Currently, there are seven different specialty areas within physical therapy, the largest is in the area of orthopaedics with 2,563 certified physical therapists.(May, 2004)[4]

The term "expert" is used to describe professionals with a high level of experience and great skill, whose primary goal is to "excel at the representative tasks in their domain".[5,6] Expertise refers to the mechanisms underlying the superior achievement of an expert.[5] Research in this domain "seeks to understand and account for what distinguishes outstanding individuals in a domain from less outstanding individuals in that domain."[7] The study of expertise can help us to better understand what we must do to increase professional skills and competence within the physical therapy profession.[8-10]

The superiority experts demonstrate is domain specific and not easily generalized outside their field of practice.[5,11] In early studies on expertise in chess, expertise was considered to be skill acquisition,[12-16] and "the final result of the gradual improvement of performance during extended experience in a domain".[5] Chess experts with extended experience were able to remember larger amounts of information in complex patterns, and used these patterns to store knowledge about which action to take in future similar situations.[5,7]

Experience in any field, however, should not be confused with learning. Expertise is not developed simply as a function of an increase in knowledge by practicing and gaining more experience,

because experts do not always perform better than non-experts,[17] and the accuracy of experts has sometimes been found to be on the same level as novices.[18,19] Clinicians can have much experience, but fail to improve their performance.[5,20,21] New personnel in all professions initially use a lot of time and energy in order to reach a certain acceptable level of performance in their domain. After they have reached this level, it is hard to predict future performance based upon how much working experience or practice they have in the domain.[11]

According to Ericsson,[11] what really differentiates experts and less proficient individuals are attributes acquired by the experts during long periods of intense training and repeated practice.[5] Those individuals who desire to become experts in their field *deliberately search out those areas in which they need to improve.* [22] Ericsson [23] and Simon [13] state that it takes about 10 years of preparation, and at least 3000 hours of practice to achieve expertise in a domain.

The most common method of studying expertise is by comparing more experienced clinicians to novices.[8,10,24-30] Experts and novices have been found to differ on how knowledgeable they are, and how well they master their domain.[31-33] In addition, they also differ in their recall of meaningful, selective knowledge when faced with complex problems.[28-30] Not only have experts learned to expand their ability to store large amounts of data; they also possess a highly organized knowledge base, which helps them find and recognize meaningful patterns in complex situations, and have relevant information easily accessible.[11,27,34] In other words, the difference between experts and non-experts is not only how complex and how much knowledge they have in a topic, but there exist different qualitative differences in the organization of knowledge and its representation.[5,35]

Experts' ability to easily retrieve relevant information, when required from long-term working memory, is due to domain (related to a specific area of knowledge) specific memory skills.[36] Clinicians with expert qualities have developed efficient ways of representing and quickly gaining access to important information from their working memory.[8,10,25,26] Ericsson[11] states that experts encode information into "special representations in working memory that allow planning, evaluation and reasoning about alternative courses of action." Their "knowledge is encoded around key domain-related concepts and solution procedures that allow rapid and reliable retrieval whenever stored information is relevant. Less skilled subjects' knowledge, in contrast, is encoded using everyday concepts that make the retrieval of even their

limited relevant knowledge difficult and unreliable."[5] The increased quality in experts' ability to access and retrieve knowledge, helps them to be more flexible in response to changing circumstances, to predict future events, and is also important for their ability to assess themselves. [11,34] This ability for self-assessment is very important, as effective learning is dependent upon critical feedback.[5,20]

Experts have been found to be better critical thinkers than novices.[24] The quality of experts' thinking processes is very important, as experts' decisions are only as good as their thinking skills. When thinking skills are poor, decisions will be poor.[8] "The ability to critically appraise various sources of knowledge, and then to integrate information deemed to be valid into one's conceptual framework for practice, has been identified as a fundamental skill supporting lifelong learning and continuing competency of physical therapists."[37,38]

Variables important for the development of general expertise studied in domains other than physical therapy have been judged applicable to our domain, and many expertise dimensions have also been confirmed in studies within the physical therapy profession.[39-41] Noll et al[42] studied the clinical reasoning of an experienced physical therapist working with subjects with low back pain, and found that clinical experience coupled with advanced training were important for the development of expertise. Experts' higher tolerance for changing circumstances has been confirmed by Jensen et al,[33] who found master physical therapists to be much less distracted by interruptions than novices.

Important advanced practice capability dimensions among physical therapists are superior use of clinical reasoning skills, patient education, teaching, self-monitoring, and the ability to modify treatments based upon responses from patients [10,26,33,41,43-47] Jensen et al[33] found that master physical therapist clinicians were better at resource utilization than newly graduated novice clinicians who had been working less than one year. The master clinicians, chosen on experience and estimated proficiency, had worked 13-23 years in their field.

Reasons for becoming certified have been assessed within sports physical therapy. They include a desire to validate specialist status, to increase competencies, to improve the overall image of physical therapy, to increase one's knowledge base, and to obtain a sense of accomplishment and recognition.[48] Therapists who have acquired sports specialization certification report having a new sense of direction, personal accomplishment, increased recognition, and increased satisfaction with their work.[48]

The exploding interest in health and outcome research is due to an increase in chronic diseases among a rapidly growing elderly population, and an increased focus upon cost-effectiveness in American health care.[49-51] This has resulted in an increased demand for accountability within the physical therapy profession from inside and outside forces, such as "funding agencies, health practitioners, and health conscious consumers", and has forced us to further validate the value of advanced certified physical therapists by clinical research. [8,52] Physical therapists must demonstrate that what we are doing does make a difference, not only for our therapists, but also for our patients. Our treatments must be both effective and efficient.

How do we, as a profession, demonstrate accountability? According to Hart and Dobrzykowski,[53]clinicians quantify accountability by evaluating the effectiveness of clinical techniques. Effectiveness can be defined by the outcomes of clinical services delivered by practitioners in outpatient practice settings.[54] Assessment of outcome effectiveness would be incomplete without assessment of efficiency (resource utilization). Efficiency is an important part of quality treatment, and can be measured as a unit of functional improvement per episode of care.[53] An indication of advanced practice capabilities demonstrating more effective outcomes by Orthopedic Clinical Specialist (OCS) certified therapists is restoration of patients to better functional status or health, a higher return to work ratio, and greater patient satisfaction compared to patients from therapists without the certification. An indication of increased efficiency would be OCS certified therapists reaching their treatment goals faster than therapists without OCS certification.[53,55]

The demands on certified therapists are high. OCS certified therapists are assumed to have "knowledge, skill, and experience *exceeding* that of the physical therapist at entry to the profession"[1](Italics added). Secondly, they are assumed to excel in delivering patient care beyond what they did before certification, as the OCS specialization is intended to be "the process by which a physical therapist builds on a broad base of professional education and practice to develop a *greater depth of knowledge and skills* related to a particular area of practice.[1](Italics added) Thirdly, OCS certified therapists are expected to excel in delivering patient care compared to their non-certified colleagues, as another goal of specialist certification is "to promote the *highest possible level of care* for individuals seeking physical therapy services in each specialty area."[1](Italics added)

Jette et al[56]and Dobrzykowski and Nance[57] have studied number of visits, duration of episode of care, and charges for patients receiving physical therapy, but they did not relate the efficiency data to outcomes. Hart and Dobzykowski[53] related efficiency data to outcomes, and compared efficiency and effectiveness of OCS therapists to non-specialized colleagues working in the same field. In their discussion, they expanded the economical consequences of specialization, ideas rooted in the more limited resources of today's health care, coupled with the increased demand for professional accountability.[8] According to Hart and Dobzykowski,[53] theoretically OCS certified PTs could be more expensive to utilize than non-certified PTs working in the same practice area. Currently, the cost for the OCS certification is $1150 for APTA members and $ 2230 for non-members. (Email communication from APTA's Specialist Certification Department, May 2004). Because the OCS certification is costly to attain, both money and time wise, OCS certified physical therapists may negotiate for higher salaries. In the future, this increased cost of salaries could carry over to more costly patient treatments, which could mean an increased cost for employers, third party payers, and patients. Considering the potential consequences of increased costs associated with OCS certified physical therapists, it is necessary to demonstrate that the benefits associated with specialization are larger than the costs.[53,55]

Hart and Dobrzykowski[53] studied treatment effectiveness and efficiency retrospectively for therapists with and without OCS certification through the commercial outcome database Focus On Therapeutic Outcomes (FOTO). Subjects were from acute orthopedic outpatient centers. Effectiveness of care was assessed by changes in health status, and efficiency was assessed by number of visits, duration of treatment episode, and cost. There was no significant difference in the effectiveness of the two groups, however, OCS therapists were more efficient than non-OCS therapists, demonstrated by fewer and less costly visits, and by performing fewer treatment procedures for the same treatment period. They theorized that the OCS certified therapist better utilizes the actual resources in each situation, thereby decreasing the cost per treatment by utilizing fewer modalities, or the total cost per treatment episode by decreasing the total number of treatments for each patient. This increased efficiency means financial savings for insurance companies, employers, and patients by decreasing the cost per treatment or per total treatment episode. Hart and Dobrzykowski concluded "the findings of improved efficiency without degradation of the effectiveness of care support the specialization process in orthopedic physical therapy".

One limitation of Hart and Dobrzykowski's study is the retrospective design; their conclusions are not as strong as if they had been based on a prospective study.[53] A retrospective study inherently contains biases researchers might not recognize, or which they are unable to control, such as "missing observations, selection bias, and referral bias" in the FOTO database.[53] If the researchers personally had been able to instruct and train the personnel in filling out the FOTO outcome assessment forms, this bias may have been less of a threat. Another limitation of their study was that 7 OCS certified physical therapists were compared with 60 non-OCS therapists that included 53 physical therapists, 5 occupational therapists, and 2 physical therapy assistants. Thus "differences in professional qualifications and skills could have influenced the clinical outcomes."[53] They also acknowledged that they used 21 different statistical analyses for their health, value, and utilization data without adjusting the alpha level, increasing the likelihood of having committed a type I error (finding a significant result which was primarily by chance). On the other hand, they reported that they had lower power than desired for their ANCOVA analyses, because the sample sizes were small. This would make it harder to find a significant result, even if one existed. Hart and Dobrzykowski[53]did not report how many clinical practices participated in their study, or the insurance sources of their subjects.

Resnik and Hart,[58] on the other hand, studied outcomes among orthopedic outpatients with back pain who received treatment from 930 physical therapists. Twenty-six of these were OCS certified. They classified therapists as experts, if subjects reported FOTO health status scores above the 90th percentile, and as average, if health status scores were between the 45th and 55th percentiles. They reported no difference in patient outcomes, whether the therapist had an OCS certification or not. A limitation of Resnik and Hart's study was that they only assessed a limited subset of the total sample (20%), so we don't have information for all physical therapists. Results could have been different had the whole sample been analyzed. They also had only 26 physical therapists participating that were OCS certified. Health status was their only outcome variable, and their results are limited to subjects with back pain.

It is still uncertain what really differentiates PTs with the OCS certification from PTs who aren't specialized.[55] It is not scientifically established that OCS certified PTs are more skillful, have higher education, or are more knowledgeable than their colleagues working in the same practice area.[55] In the book "Expertise in Physical Therapy Practice"[9] Rothstein defines an expert as someone who achieves

superior patient outcomes. Specialized physical therapists might be considered to be experts because we assume they have "advanced practice capabilities",[4] but there is little research that shows that OCS certified therapists really demonstrate advanced skills and have better outcomes.[53,55,58,59]

A weakness of the clinical specialization within the physical therapy profession of today is that "specialization requires no practical examination or supervised clinical experience"; the OCS certification is based upon passing a written test.[59] "In addition, the specialization process does not formally address the theoretical or scientific background to engage in critical inquiry or the systematic review of outcomes of care. Less than 7% of the examination for orthopaedic or sports physical therapy specialization addresses clinical research, an essential element of practice."[59]

To broaden our understanding of eventual benefits of the OCS certification, it would be helpful to also compare the two groups on achieved patient satisfaction, and the PTs ability to impact patients' work status.[34,60-63] Patient satisfaction and work status have not been previously assessed for OCS and non-OCS certified physical therapists. Patient satisfaction has important consequences, since satisfaction can positively influence patients' healing, health, and behavior. Satisfied patients are more compliant and co-operative than dissatisfied patients. Satisfied patients also less often change health providers and take punitive actions than dissatisfied patients, thus affecting patient outcomes and thereby also the cost of care for clinics.[63,64] A study comparing cost related variables between physical therapists with and without an OCS certification should include work status as an outcome measure. Work status is easily assessed, objective, and is highly relevant to patients and society. It is important to remember, however, that many other variables also influence work status outcomes. Some of these confounding variables are physical job demands, work autonomy, job satisfaction, relationships with fellow employees or supervisors, marital status, financial need, economic environment and job availability, and length of time off work before treatment.[61,65] The presence of another breadwinner in the family and nearness to retirement age are other factors that can influence the decision to continue working.[66]

To summarize, the claims that OCS certification benefits society and patients by providing therapists with advanced knowledge and skills to achieve better patient outcomes need to be further supported by outcomes research.[53,58] Important areas of consideration in exploring OCS certified PTs and patient outcomes, in addition to the effectiveness and efficiency of the therapist, are indications of clinic

quality: value (unit of functional improvement per dollar cost to the payer), utilization (unit of functional improvement per visit),[53] patient satisfaction and work status.[34,60-63]

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APPENDIX B

Tables of Health and Treatment Types

Table 11.
Descriptives* and Analyses of SF-12v2 Total and Physical Health by OCS Status

Variables	Non-OCS (n = 177) Mean	(SD)	OCS (n = 102) Mean	(SD)	p†
Total Health Status‡					
1st visit	56.4	(18.2)	52.9	(18.7)	
6 visit adjusted scores§	60.9	(12.9)	64.6	(12.9)	.03
Physical Functioning					
1st visit	42.3	(32.2)	39.2	(33.7)	
6 visit adjusted scores§	48.7	(25.4)	48.3	(25.4)	.88
Role Physical					
1st visit	41.1	(28.2)	36.9	(29.6)	
6 visit adjusted scores§	50.7	(22.6)	51.9	(22.6)	.66
Bodily Pain					
1st visit	44.9	(26.7)	41.9	(26.4)	
6 visit adjusted scores§	53.6	(24.4)	59.9	(24.4)	.04
General Health					
1st visit	72.4	(20.2)	69.4	(20.2)	
6 visit adjusted scores§	72.2	(13.9)	70.5	(13.9)	.32

* Transformed scale scores, range 0-100, higher scores indicate better health

† ANCOVA analyses, 6th visit's health scales (dependent variable), OCS (independent), and 1st health scale score (covariate)

‡ Total health scale was created by summing the means from all physical and mental functional scales and dividing by the number of scales.

§ Means and SDs are adjusted by the initial health scale for each scale

Table 12.

Descriptives* and Analyses of SF-12v2 Mental Health and Physical and Mental Component Scores by OCS Status

	Non-OCS (n = 177)		OCS (n = 102)		
Variables	Mean	(SD)	Mean	(SD)	p[†]
Vitality					
1st visit	43.8	(25.8)	40.9	(25.3)	
6 visit adjusted scores[‡]	51.8	(20.4)	54.0	(20.4)	.38
Social functioning					
1st visit	68.5	(31.7)	61.3	(33.9)	
6 visit adjusted scores[‡]	71.7	(24.4)	76.1	(24.5)	.14
Role Emotional					
1st visit	72.6	(28.4)	68.6	(29.6)	
6 visit adjusted scores[‡]	73.3	(22.5)	78.7	(22.5)	.06
Mental Health					
1st visit	65.4	(22.6)	65.0	(23.4)	
6 visit adjusted scores[‡]	68.39	(15.7)	73.1	(15.7)	.02
PCS[§]					
1st visit	36.37	(9.7)	35.3	(9.1)	
6 visit adjusted scores[‡]	39.233	(7.5)	39.1	(7.5)	.85
MCS[‖]					
1st visit	49.33	(11.6)	48.0	(10.9)	
6 visit adjusted scores[‡]	49.88	(7.8)	52.7	(7.8)	.004

* Transformed scale scores, range 0-100, higher scores indicate better health

[†] ANCOVA analyses, 6th visit's health scales (dependent variable), OCS (independent), and 1st health scale score (covariate)

[‡] Means and SDs are adjusted by the initial health scale for each scale

[§] Physical Component Summary Scale, (Summarizes physical functioning of SF-12v2)

[‖] Mental Component Summary Scale, (Summarizes mental functioning of SF-12v2)

Table 13.
Billed Treatment Codes by OCS Status

	OCS Status				
	Non-OCS (n =177)		OCS (n = 102)		
Treatment Variables	%	(n)	%	(n)	p*
Re-evaluation	11	(20)	5	(5)	.07
Hot/cold packs	20	(35)	34	(34)	.01 **
Electrical Stimulation Unattended	28	(50)	28	(29)	.97
Ultrasound	10	(17)	15	(15)	.20
Other modalities §	16	(29)	22	(22)	.28
Therapeutic Procedures	92	(162)	88	(90)	.37
Neuromuscular Re-education	13	(23)	22	(22)	.06
Manual Therapy Techniques	78	(138)	64	(65)	.01 **
Activities of Daily Living§§	8	(14)	10	(10)	.59
Other Procedures§§§	12	(21)	16	(16)	.37

* Chi Square tests

** Significant at alpha .01

§ Mechanical traction, paraffin bath, whirl pool, diathermy, iontophoresis, pool therapy and unlisted modality

§§ Gait training, therapeutic activities, and self-care and home management

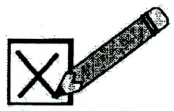
§§§ Massage, manual electrical stimulation additional treatment time, therapeutic procedures group, taping, and application of computer assisted equipment

APPENDIX C

The Initial Questionnaire, and the Health, Work Status and Satisfaction Follow-up Questionnaire

Initial Questionnaire **Number**

A Treatment Outcome Comparison of Physical Therapists with and without Orthopedic Clinical Specialist (OCS) Certification in the Outpatient Orthopedic Setting



Please write today's date here: _____

SF-12v2™ Health Survey (Acute)

Instructions for Completing the Health Questionnaire

Please answer every question. Please take time to read and answer each question carefully by filling in the bubble that best represents your response.

EXAMPLE

This is for your review. Do not answer this question. The questionnaire begins with the section ***Your Health in General*** on next page.

For each question you will be asked to fill in a bubble in each line:

1. **How strongly do you agree or disagree with each of the following statements?**

		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
a)	I enjoy listening to music	O	●	O	O	O
b)	I enjoy reading magazines	●	O	O	O	O

(SF12v2 Standard, US Version 2.0)

Please begin answering the questions now.

Your Health in General

1. In general, would you say your health is:

Excellent	Very good	Good	Fair	Poor
O1	O2	O3	O4	O5

2. The following questions are about activities you might do during a typical day. Does <u>your health now limit you</u> in these activities? If so, how much?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
a) **Moderate activities,** such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	O1	O2	O3
b) Climbing **several** flights of stairs	O1	O2	O3

3. During the past week, how much of the time have you had any of the following problems with your work or other regular daily activities <u>as a result of your physical health</u>?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a) **Accomplished less** than you would like	O1	O2	O3	O4	O5
b) Were limited in the **kind** of work or other activities	O1	O2	O3	O4	O5

4. **During the <u>past week</u> how much of the time have you had any of the following problems with your work or other regular daily activities <u>as a result of any emotional problems</u> (such as feeling depressed or anxious)?**

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a) **Accomplished less** than you would like	O1	O2	O3	O4	O5
b) Did do work or other activities **less carefully than usual**	O1	O2	O3	O4	O5

5. **During the <u>past week</u>, how much did <u>pain</u> interfere with your normal work (including both work outside the home and housework)?**

Not at all	A little bit	Moderately	Quite a bit	Extremely
O1	O2	O3	O4	O5

6. **These questions are about how you feel and how things have been with you <u>during the past week</u>. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the <u>past week</u>...**

	All of the time	Most of the time	Some of the time	A Little of the time	None of the time
a) have you felt calm and peaceful?	O1	O2	O3	O4	O5
b) did you have a lot of energy?	O1	O2	O3	O4	O5
c) have you felt downhearted and depressed?	O1	O2	O3	O4	O5

7. **During the <u>past week</u>, how much of the time has your <u>physical health or emotional problems</u> interfered with your social activities (like visiting friends, relatives, etc.)?**

All the time	Most of the time	Some of the time	A little of the time	None of the time
O1	O2	O3	O4	O5

(SF12v2 Standard, US Version 2.0)

Information About You

The following questions will help us to describe the characteristics of the research group that you belong to. When there are several options to choose from, please circle the one best answer that applies to you.

8. Please circle your age

a) 20-29
b) 30-39
c) 40-49
d) 50-59
e) 60-69

9. Please circle your gender a. Male b. Female

10. Which best describes your formal education? [Circle your answer]

A. No high school diploma
B. High school diploma
C. High school diploma and some college
D. College diploma
E. Some graduate work
F. Graduate degree

11. Why do you need physical therapy treatment? (State your problem)

_____

_____

12. For how long have you had this problem?

A. Less than 1 month
B. More than 1 months but less than 3 months
C. More than 3 months
D. Cannot recall

13. Have you had this problem before?

a. Yes b. No

→ **If yes - have you had *treatment* for this problem before?** a. Yes b. No

14. Do you have other health problems besides the problem you need treatment for now?

A. No, no other problems
B. Yes, 1 other problem
C. Yes, 2 or more other problems

15. What type of insurance covers your physical therapy treatment?

A. Private (e.g. Blue Cross, Blue Shields etc.)
B. HMO
C. Worker's Compensation
D. Medicare
E. Other; Please Specify_____

Work Status and Work Demands

16. Please circle your current work status.

A. Employed, working full time
B. Employed, working full time but on light duty
C. Employed, working part-time
D. Employed, but not working because of health
E. Not working, receiving disability
F. Unemployed
G. Retired
H. Student

17. How would you best describe your physical demands at work?

A. Light
B. Medium
C. Heavy
D. Very heavy

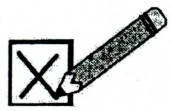
Finally, please check if you: Remembered to write today's date on the front page? ☐

Answered each question from pages 1-5? ☐

Thank You Very Much!

Health, Work Status and Satisfaction Follow-up Questionnaire Number

A Treatment Outcome Comparison of Physical Therapists with and without Orthopedic Clinical Specialist (OCS) Certification in the Outpatient Orthopedic Setting



Please write today's date here: _____

SF-12v2™ Health Survey (Acute)[1]

Instructions for Completing the Health Questionnaire

Please answer every question. Please take time to read and answer each question carefully by filling in the bubble that best represents your response.

EXAMPLE

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For each question you will be asked to fill in a bubble in each line:

1. **How strongly do you agree or disagree with each of the following statements?**

		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
a)	I enjoy listening to music	O	O	O	O	O
b)	I enjoy reading magazines	O	O	O	O	O

[1] SF-12v2™ Health Survey © 2000 by QualityMetric Incorporated – All Rights Reserved
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(SF12v2 Standard, US Version 2.0)

Please begin answering the questions now.

Your Health in General

1. In general, would you say your health is:

Excellent	Very good	Good	Fair	Poor
O1	O2	O3	O4	O5

2. The following questions are about activities you might do during a typical day. Does <u>your health now limit you</u> in these activities? If so, how much?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
a) **Moderate activities**, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	O1	O2	O3
b) Climbing several flights of stairs	O1	O2	O3

3. During the past week, how much of the time have you had any of the following problems with your work or other regular daily activities <u>as a result of your physical health</u>?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
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4. **During the <u>past week</u> how much of the time have you had any of the following problems with your work or other regular daily activities <u>as a result of any emotional problems</u> (such as feeling depressed or anxious)?**

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a) <u>Accomplished less</u> than you would like	O1	O2	O3	O4	O5
b) Did do work or other activities **less carefully than usual**	O1	O2	O3	O4	O5

5. **During the <u>past week</u>, how much did <u>pain</u> interfere with your normal work (including both work outside the home and housework)?**

Not at all	A little bit	Moderately	Quite a bit	Extremely
O1	O2	O3	O4	O5

6. **These questions are about how you feel and how things have been with you <u>during the past week</u>. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the <u>past week</u>…**

	All of the time	Most of the time	Some of the time	A Little of the time	None of the time
a) have you felt calm and peaceful?	O1	O2	O3	O4	O5
b) did you have a lot of energy?	O1	O2	O3	O4	O5
c) have you felt downhearted and depressed?	O1	O2	O3	O4	O5

7. **During the <u>past week</u>, how much of the time has your <u>physical health or emotional problems</u> interfered with your social activities (like visiting friends, relatives, etc.)?**

All the time	Most of the time	Some of the time	A little of the time	None of the time
O1	O2	O3	O4	O5

(SF12v2 Standard, US Version 2.0)

Work Status

8. Please circle your current work status.

A. Employed, working full time
B. Employed, working full time but on light duty
C. Employed, working part-time
D. Employed, but not working because of health
E. Not working, receiving disability
F. Unemployed
G. Retired
H. Student

Satisfaction

This part of the survey asks about your satisfaction or dissatisfaction with different aspects of your physical therapy treatment. This information can help us to understand what you think was good with your treatment experience, and what you think needs to be improved.

Adapted Questions from the Canadian Back Institute Survey (CBI)[2]

For each of the following statements, please indicate whether you Strongly Agree (SA), Agree (A), are Uncertain (U), Disagree (D), or Strongly Disagree (SD).

	[Mark one box for each line]	SA	A	U	D	SD
A.	My therapist helped me resolve my problem.					
B.	My therapist was able to change my treatment program to meet my specific needs.					
C.	My therapist did not have the skills necessary to help me.					
D.	My therapist had the knowledge to answer my questions.					
E.	My therapist provided me with education regarding my specific problem by explaining the nature of my treatment.					

2 McIntosh, G,Mayo, MC, Stymiest, PJ. Implementing CQI: measuring levels of service quality at physiotherapy clinics. *Physiotherapy Canada*. Summer 1994;46:178-189.

The Physical Therapy Outpatient Satisfaction Survey (PTOPS)[3]

For each of the following statements, please indicate whether you Strongly Agree (SA), Agree (A), Are Uncertain (U), Disagree (D), or Strongly Disagree (SD).

	[Mark one box for each line]	SA	A	U	D	SD
1.	The cost of treatment is more than I expected.					
2.	I enjoy listening to my therapist.					
3.	I would like the facility to be quieter than it is.					
4.	The facility is flexible about payment options.					
5.	The distance required to get to the facility is acceptable to me.					
6.	I expect the therapist to spend more time with me than he/she does.					
7.	I am given privacy when I need it.					
8.	It is difficult for me to get into the facility from the parking lot.					
9.	I am charged a reasonable amount for my therapy.					
10.	This facility could be more conveniently located for me.					
11.	I feel my therapist overcharges me.					
12.	The office staff is attentive to my needs.					
13.	My therapist acts like he/she is doing me a favor by treating me.					
14.	The facility is in a desirable location.					
15.	My therapist could communicate with me more.					
16.	I have to wait too long between appointments.					
17.	The quality of care I receive is **not** compatible with the cost.					
18.	This facility is a nice place to get my therapy.					
19.	It is somewhat difficult for me to reach this PT facility.					

Physical Therapy Outpatient Satisfaction Survey (PTOPS) continued...

For each of the following statements, please indicate whether you Strongly Agree (SA), Agree (A), are Uncertain (U), Disagree (D), or Strongly Disagree (SD).

	[Mark one box for each line]	SA	A	U	D	SD
20.	This facility is too crowded.					
21.	I have to travel too far to receive my treatment.					
22.	I can get around easily inside this facility.					
23.	I don't really enjoy talking with my therapist.					
24.	My therapist seems to have a genuine interest in me as a person.					
25.	My therapist does **not** expect me to pay significantly more than what my insurance covers.					
26.	My questions are answered clearly.					
27.	My therapist doesn't give me a chance to say what is on my mind.					
28.	I should **not** have to travel this far for therapy.					
29.	This facility appreciates my business.					
30.	It could be easier to make the arrangements to pay for my treatment.					
31.	My therapist should be more thorough in my treatment.					
32.	The physical therapy facility is conveniently located for me.					
33.	My therapist should listen more carefully to what I tell him/her.					
34.	I get along well with everyone in this physical therapy facility.					

3 Roush, SE, Sonstroem, RJ. Development of the physical therapy outpatient satisfaction survey (PTOPS). *Phys Ther.* February 1999;79:159-170.

Finally, please check if you: Remembered to write today's date on the front page? ☐

Answered each question from page 1-6? ☐

Thank You!